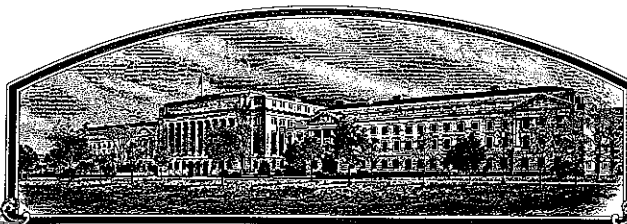


No.

9700007



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Cornell Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT, IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF SEEDS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Cayuga'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirtieth day of July in the year of our Lord one thousand nine hundred and ninety-nine.

Attest:

*Ann Marie Du*

Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Ben H. H. H.*  
Secretary of Agriculture




U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE DIVISION - PLANT VARIETY PROTECTION OFFICE

## APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a).

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
Cornell Agricultural Experiment Station		NY262-37-422	Cayuga
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)		6. TELEPHONE (include area code)	<b>FOR OFFICIAL USE ONLY</b> PVPO NUMBER 97000007 DATE Oct. 10, 1996 FILING AND EXAMINATION FEE \$2150.00 DATE 09/03/96 CERTIFICATION FEE \$300 DATE 8-10-99
245 Roberts Hall Cornell University Ithaca, NY 14853		607-255-2552	
7. GENUS AND SPECIES NAME		6. FAX (include area code)	
Triticum aestivum L.		607-255-7499	
8. FAMILY NAME (Botanical)			
Gramineae			
9. CROP KIND NAME (Common name)			
Soft white winter wheat			
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name)			
State Agricultural Experiment Station			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	
New York		1888	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS			14. TELEPHONE (include area code)
Mark E. Sorrells 252 Emerson Hall Cornell University Ithaca, NY 14853			607-255-1665
			15. FAX (include area code)
			607-255-6683
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO)			
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act)?			
<input checked="" type="checkbox"/> YES (If "yes," answer items 18 and 19 below) <input type="checkbox"/> NO (If "no," go to item 20)			
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?		19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?	
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<input checked="" type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED	
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?			
<input type="checkbox"/> YES (If "yes," give names of countries and dates) <input checked="" type="checkbox"/> NO			
21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.			
The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.			
Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT (Owner(s))		SIGNATURE OF APPLICANT (Owner(s))	
			
NAME (Please print or type)		NAME (Please print or type)	
Ronnie Coffman			
CAPACITY OR TITLE	DATE	CAPACITY OR TITLE	DATE
Director of research	8/22/96		

**Plant Variety Protection Application**  
**Cayuga Soft White Winter Wheat**  
**Revised 6/15/99**

**Exhibit A. Origin and Breeding History of Cayuga Soft White Winter Wheat**

**Genealogy:**

Cayuga was selected from the cross Geneva/Clark's Cream//Geneva made in 1986. A selection from this cross made in 1989 was designated NY262-37-10W. In 1992, a selection from NY262-37-10W was designated NY262-37-422.

**Selection and Multiplication:**

The Geneva x Clark's Cream  $F_1$  cross was made in the summer of 1984 and backcrossed to Geneva that winter in the greenhouse. No segregation was observed in the  $F_1$  generation.

In the spring of 1985 the  $BC_1F_1$  seed were vernalized, transplanted to the field, and selfed to produce  $BC_1F_2$  progenies. In 1986, the  $BC_1F_2$  progeny from 4 different  $BC_1$  plants were vernalized, transplanted to the field, and harvested by family. A few of the  $BC_1F_3$  progenies were planted in the fall, 1986 greenhouse and advanced a generation in the winter greenhouse to produce the  $BC_1F_4$  for an inheritance study on sprouting resistance. These were vernalized and planted in two replicates at two locations in the spring of 1987. In the  $BC_1F_2$ ,  $BC_1F_3$ , and the  $BC_1F_4$  generations, characters segregating included awnedness, chaff color, plant height, lodging resistance, winter hardiness, sprouting resistance, and disease resistance.

In the fall of 1987, the seed from an inheritance study on sprouting resistance was bulked by entry (plots 154,445,754,1045) and planted in a Sprout Screening Nursery plot #208. In the summer of 1988, white chaffed, awnless heads were selected and harvested from plot #208. In 1988-9, a bulk of white chaffed awnless heads from the 1988 Sprout screening plot #208 was planted in Screening plot #807 as well as a replicated Sprout Advanced trial entry #34. A bulk sample of seed from the 1989 Screening plot #807 was planted in Early Generation plot #711 for 1989-90. At harvest 36 white chaffed, awnless heads were threshed and planted in separate headrows in 1990-91. At harvest I selected 11 headrows with white chaff and no awns out of the 36 and kept the seed separate. In 1991-2, these 11 selections were planted in screening plots and evaluated for uniformity. Ten were harvested and kept separate. In 1992-3, NY262-37-10W and these 10 selections were tested in a replicated

trial in 3 locations. Entry 6 from the 1992 screening plot #422 was selected and designated NY262-37-422. The 1992 Screening Plot#422 also was used directly as the breeder seed in 1992-3 for a breeder seed increase block that was grown on the Caldwell 4 field and rogued for plant type and uniformity. In 1993-4, a second breeder seed increase was grown on the Caldwell 5 field at the Cornell Agricultural Experiment Station (about 2 acres). NY262-37-10W has been tested in regional trials since 1990 and NY262-37-422 since 1994.

<u>Year</u>	<u>Characters Selected</u>
1985	None
1986	None
1987	None
1988	Chaff color, awnedness
1989	None
1990	Chaff color, awnedness
1991	Chaff color, awnedness
1992	Uniformity
1993	Chaff color, awnedness, grain yield, test weight, lodging resistance, winter hardiness, sprouting resistance.
1994	Chaff color, awnedness, grain yield, test weight, lodging resistance, winter hardiness, sprouting resistance.

#### **Uniformity and Stability:**

The original breeder seed lots were extensively rogued for offtypes and variants and the foundation seed fields were uniform and stable in 1995 and 1996. No variants have been observed since 1995. The frequency of variants and offtypes is less than 0.01% and can be verified by examination of the records of the New York Seed Improvement Certified Seed Program. This variety has been uniform and stable for at least 4 generations.

#### **Type and Frequency of Variants:**

Variants are extremely rare. No variants have been observed since 1995. In 1995, 4 foundation seed production fields totaling 27.2 acres of Cayuga were inspected. No variants were observed in 160 random counts of 500 heads per count. In 1996, 4 foundation seed production fields totaling 23 acres of Cayuga were inspected. No variants were observed in 40 random counts of 500 heads per count.

The first Certified Seed crop of Cayuga wheat was harvested in July, 1996. Sixteen applicants entered 38 fields totalling 446 production acres. No variants were observed in a minimum of 230 random counts of 500 heads per count. These data may be verified from records maintained by the New York Seed Improvement Program, Dept. of Plant Breeding, 252 Emerson Hall, Cornell Univ., Ithaca, NY 14853.

**Exhibit B. Statement of Distinctiveness****Cayuga Soft White Winter Wheat**

Cayuga is generally most similar to Geneva in morphological traits, lodging resistance, days to anthesis, days to physiological maturity, reaction to Wheat Spindle Streak Mosaic virus, and to prevalent races of leaf rust. Cayuga can be most clearly distinguished from Geneva by chaff color. Cayuga has white chaff; whereas, Geneva has bronze chaff. Plant height of Cayuga averages 15 cm taller than Geneva (See table 1 for analysis). Cayuga was bred specifically for a high level of preharvest sprouting resistance and is superior to all other soft white winter wheat cultivars tested in our program. For comparison with a typical soft white winter wheat, table 2 shows an analysis of preharvest sprouting scores for Geneva and Cayuga over 5 years. The sprout-test methodology is identical to that published in Anderson et al. (1993).

At the molecular level, Cayuga (lane 5) may be distinguished from Geneva (lane 6), using DNA probes BCD120(DraI) and WG996(HindIII) in Southern hybridizations (Methods published in Heun et al. (1991) (Figures 1, 2). These probes can be obtained from the USDA Probe Repository at the Western Regional Research Laboratory in Albany, CA.

Anderson, J.A., M.E. Sorrells, and S.D. Tanksley. 1993. RFLP analysis of genomic regions associated with resistance to pre-harvest sprouting in wheat by RFLPs. *Crop Sci.* 33:453-459.

Heun, M., A.E. Kennedy, J.A. Anderson, N.L.V. Lapitan, M.E. Sorrells, and S.D. Tanksley. 1991.

Construction of an RFLP map for barley (*Hordeum vulgare* L.). *Genome* 34:437-446.

The table below compares performance of Cayuga to other varieties adapted to this region and grown commercially in recent years and is only provided for general information.

**Cayuga Performance Summary**

Entry	Grain Yield		Test Weight (kg/hl)		Lodging	Winter	Head	Phys.	Sprout	
	3 Year					Surv	Date	Matur.	Height	Score
	kg/h	b/a	3 Yr	lb/b	3 Yr	3 Yr	3 Yr	1 Yr	1 Yr	3 Yr
Houser	4003	60	71.9	55.7	2.4	92	6/10	7/12	94	4.6
Geneva	4218	63	74.8	58.0	1.4	94	6/6	7/9	91	4.4
Harus	4188	62	76.0	58.9	1.0	90	6/7	7/8	91	3.6
NYBatavia	4176	62	73.4	56.9	1.0	89	6/10	7/11	89	3.6
Cayuga	3979	59	77.0	59.7	1.4	90	6/8	7/9	105	1.6

Table 1. Comparison of plant height (cm) for Cayuga and Geneva, 1995-1997.

Year	Nursery	Location	Rep	Height Score	
				Cayuga	Geneva
1995	SWW	Ket	R1	103	92
1995	SWW	Ket	R2	106	90
1995	UESW	Nket	R1	105	90
1995	UESW	Nket	R2	110	95
1995	UESW	Nket	R3	100	76
1996	UESW	Ket3	R1	105	95
1997	SWW	Hel	R1	107	100
1997	UESW	Hel1	R1	117	103
t-Test: Two-Sample Assuming Unequal Variances					
	<i>Cayuga</i>	<i>Geneva</i>			
Mean	106.625	92.625			
Variance	25.982143	66.267857			
Observations	8	8			
Hypothesized Mean Difference	0				
df	12				
t Stat	4.122777				
P(T<=t) one-tail	0.0007068				
t Critical one-tail	1.7822867				
P(T<=t) two-tail	0.0014136				
t Critical two-tail	2.1788128				

Table2. Comparison of preharvest sprouting scores for Cayuga and Geneva, 1994-1998.

Year	Nursery	Location	Rep	Sprout Score		
				Cayuga	Geneva	
1994	SWW	Sny	R1	2.34	6.16	
1994	SWW	Sny	R2	1.49	5.95	
1994	SWW	Ket	R1	1.49	6.80	
1994	SWW	Ket	R2	2.55	6.38	
1995	SWW	Hel	R1	3.61	4.89	
1995	SWW	Hel	R2	0.82	3.69	
1995	SWW	Hel	R1	2.07	3.15	
1995	SWW	Hel	R2	0.43	3.45	
1996	SWW	Sny	R1	0.84	3.77	
1996	SWW	Sny	R2	0.63	3.77	
1996	SWW	NKet	R1	0.80	2.07	
1996	SWW	NKet	R2	1.69	2.63	
1997	SWW	Hel	R1	2.10	4.27	
1997	SWW	Hel	R2	2.73	4.08	
1997	SWW	Nket	R1	1.60	5.20	
1997	SWW	Nket	R2	2.00	4.20	
1997	SRW	Hel	R1	1.91	4.78	
1997	SRW	Hel	R2	2.49	4.01	
1997	SRW	Nket	R1	2.60	5.60	
1997	SRW	Nket	R2	3.00	5.20	
1998	SWW	Hel	R1	2.80	6.20	
1998	SWW	Hel	R2	1.20	5.40	
1998	SWW	Nket	R1	1.80	4.00	
1998	SWW	Nket	R2	2.00	2.80	
t-Test: Two-Sample Assuming Unequal Variances						
	Sprout Score					
	Cayuga	Geneva				
Mean	1.875	4.519				
Variance	0.670	1.634				
Observations	24	24				
Hypoth Mean Diff	0					
df	39					
t Stat	-8.533					
P(T<=t) one-tail	9.33E-11					
t Critical one-tail	1.6848753					
P(T<=t) two-tail	1.87E-10					
t Critical two-tail	2.0226889					

Figure 1.

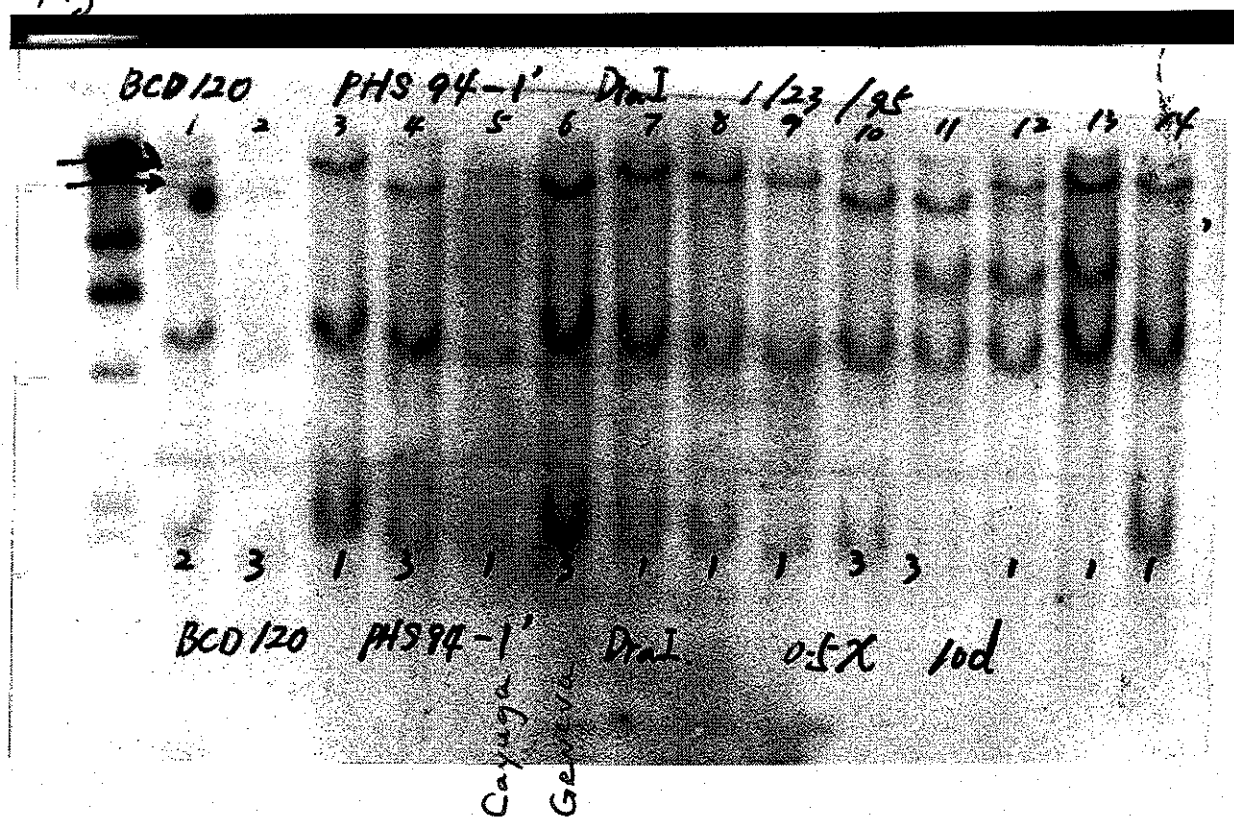
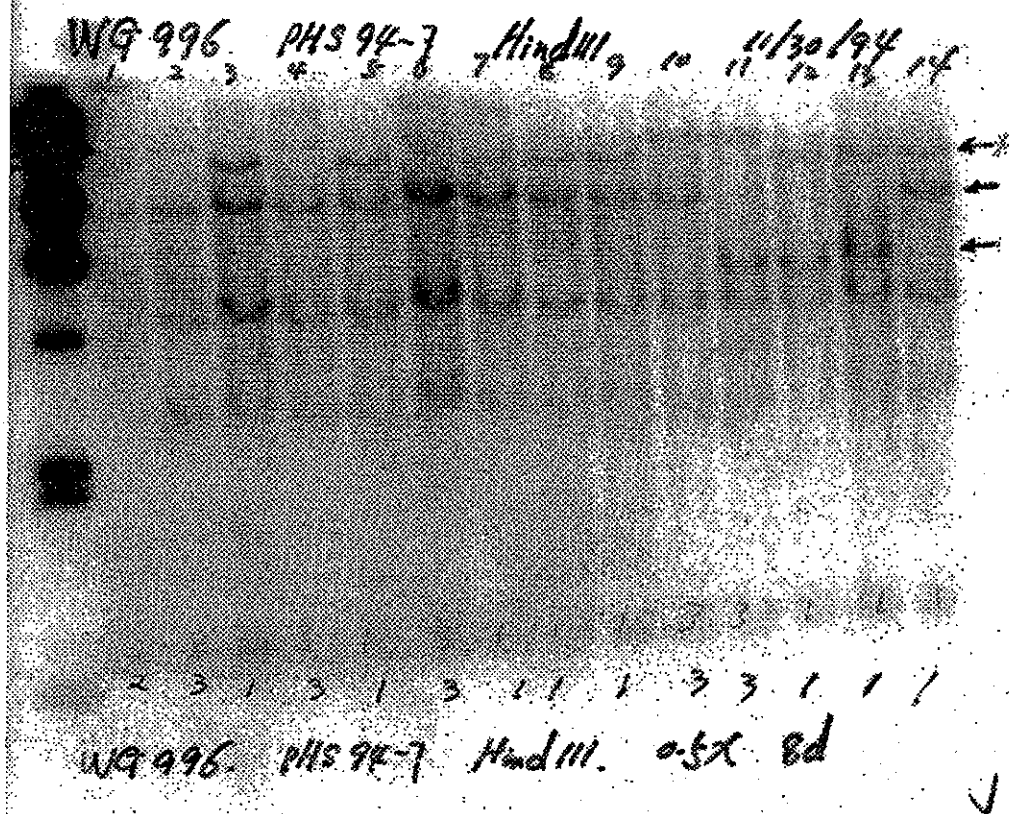


Figure 2.



OBJECTIVE DESCRIPTION OF VARIETY  
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S) Cornell Agricultural Experiment Station	FOR OFFICIAL USE ONLY PVPO NUMBER 97000007
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) 245 Roberts Hall Cornell University Ithaca, NY 14853	VARIETY NAME OR TEMPORARY DESIGNATION Cayuga

Place the appropriate number that describes the varietal character of this variety in the boxes below.  
Place a zero in first box (e.g. 0 8 9 or 0 9 ) when number is either 99 or less or 9 or less.

1. KIND:

1 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

2 1 = SPRING 2 = WINTER 3 = OTHER (Specify) 1 1 = SOFT 3 = OTHER (Specify)  
2 = HARD

1 1 = WHITE 2 = RED 3 = OTHER (Specify)

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

2 5 4 FIRST FLOWERING 2 5 8 LAST FLOWERING

4. MATURITY (50% Flowering):

NO. OF DAYS EARLIER THAN 1 = ARTHUR 2 = SCOUT 3 = CHRIS  
0 3 NO. OF DAYS LATER THAN 1 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT (From soil level to top of head):

1 1 1 CM. HIGH 1 1 = ARTHUR 2 = SCOUT 3 = CHRIS  
1 5 CM. TALLER THAN 1 4 = LEMHI 5 = NUGAINES 6 = LEEDS  
CM. SHORTER THAN

6. PLANT COLOR AT BOOTING (See reverse):

1 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHUR COLOR:

1 1 = YELLOW 2 = PURPLE

8. STEM:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT 2 Waxy bloom: 1 = ABSENT 2 = PRESENT  
2 Hairiness of last internode or rachis: 1 = ABSENT 2 = PRESENT 1 Internodes: 1 = HOLLOW 2 = SOLID  
0 4 NO. OF NODES (Originating from node above ground) 2 5 CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT 2 Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

1 Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 2 Flag leaf: 1 = NOT TWISTED 2 = TWISTED  
1 Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT 2 Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT  
1 4 MM. LEAF WIDTH (First leaf below flag leaf) 2 2 CM. LEAF LENGTH (First leaf below flag leaf):

## FORM GR-470-6 (REVERSE)

## 11. HEAD:

☐ 2 Density: 1 = LAX 2 = DENSE 4.0

☐ 1 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE  
4 = OTHER (Specify) \_\_\_\_\_

☐ 2 Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

☐ 2 Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED  
5 = BROWN 6 = BLACK 7 = OTHER (Specify) \_\_\_\_\_

☐ 7. ☐ 3 CM. LENGTH ☐ 1 ☐ 2 MM. WIDTH

## 12. GLUMES AT MATURITY:

☐ 2 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.)  
3 = LONG (CA. 9 mm.) 7.8mm

☐ 3 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)  
3 = WIDE (CA. 4 mm.)

☐ 3 Shoulder: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED  
shape: 4 = SQUARE 5 = ELEVATED 6 = APICULATE

☐ 2 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

## 13. COLEOPTILE COLOR:

☐ 1 1 = WHITE 2 = RED 3 = PURPLE

## 14. SEEDLING ANTHOCYANIN:

☐ 1 1 = ABSENT 2 = PRESENT

## 15. JUVENILE PLANT GROWTH HABIT:

☐ 1 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

## 16. SEED:

☐ 1 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

☐ 1 Cheek: 1 = ROUNDED 2 = ANGULAR

☐ 2 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

☐ 1 Brush: 1 = NOT COLLARED 2 = COLLARED

☐ 0 Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN  
4 = BROWN 5 = BLACK

☐ 1 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) \_\_\_\_\_

☐ 6. ☐ 3 MM. LENGTH ☐ 3. ☐ 6 MM. WIDTH ☐ 3 ☐ 5 GM. PER 1000 SEEDS

## 17. SEED CREASE:

☐ 1 Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'  
2 = 80% OR LESS OF KERNEL 'CHRIS'  
3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

☐ 2 Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'  
2 = 35% OR LESS OF KERNEL 'CHRIS'  
3 = 50% OR LESS OF KERNEL 'LEMHI'

## 18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 0 STEM RUST  
(Races) \_\_\_\_\_

☐ 1 LEAF RUST  
(Races) \_\_\_\_\_

☐ 1 STRIPE RUST  
(Races) \_\_\_\_\_

☐ 0 LOOSE SMUT

☐ 2 POWDERY MILDEW

☐ 0 BUNT

☐ 2 OTHER (Specify) wheat spindle streak virus

## 19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 0 SAWFLY

☐ 0 APHID (Bydv.)

☐ 0 GREEN BUG

☐ 0 CEREAL LEAF BEETLE

☐ 0 OTHER (Specify) \_\_\_\_\_

 HESSIAN FLY  
RACES:

☐ 0 GP

☐ 0 A

☐ 0 B

☐ 0 C

☐ 0 D

☐ 0 E

☐ 0 F

☐ 0 G

## 20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering		Seed size	
Leaf size		Seed shape	
Leaf color		Coleoptile elongation	
Leaf carriage		Seedling pigmentation	

## INSTRUCTIONS

Read instructions of name and procedures for completing this form

# 1997 Crop Drill Plot Entries

#150 - #170  
Soft Red Nursery  
Ithaca, New York

The 21 entries in this nursery were compared to #155, MENDON. In the SWQL database of 382 Allis-milled cultivars, MENDON ranked 107<sup>th</sup> in mill score, based on the mean data from six millings:

Test Weight	59.9	58.4
St. Grade Flour Yield	77.3	77.5
Endosperm Separation Index	9.5	9.4
Friability	28.2	27.8
Flour Protein	-	7.46
Flour Ash	0.390	0.405
A.W.R.C.	52.1	53.9
Break Flour Yield	33.7	37.1
Cookie Diameter	-	18.26

The standard was comparable to the historical data, although lower in test weight and higher in Break Flour Yield. The standard had good milling characteristics, with a st. grade flour yield of 77.5% and E.S.I. of 9.4%.

The Baking Quality characteristics were also good, with a large cookie diameter and high Break Flour Yield.

Entries with Combined Quality Scores of "C" or better were acceptable for milling quality. Lower scoring entries were given "Q" notations for low St. Grade flour yield and high S.E.

All entries scoring above 'F' for Baking Quality had good Baking Qualities. Lower scoring entries had small cookies and high A.W.R.C., along with low break flour yields.

SOFT WHEAT QUALITY EVALUATION  
FOR WHEAT AND MILLING QUALITY

1997 CROP

SOFT RED NURSERY  
ITHACA, NEW YORK

STANDARD #155, MENDON

SAMPLE NO.	ENTRY	MILLING QUALITY SCORE	BAKING QUALITY SCORE	COMBINED QUALITY SCORE	TEST WT. LB/BU.	BREAK FLOUR YIELD	RED. PASS	ST. GR. FLOUR YIELD	FRIAB.	E.S.I.	FLOUR ASH	MILLAB.
150	GENEVA	108.3 A	105.0 A	105.0 A	59.7	37.74	7	78.30	30.21	8.82	0.417	119.33
	STANDARD	100.0 A	100.0 A	100.0 A	58.4	37.09	8	77.50	27.80	9.43	0.405	110.69
155	MENDON	100.0 A	100.0 A	100.0 A	58.4	37.09	8	77.50	27.80	9.43	0.405	110.72
162	PA 8769-158	96.7 B	99.7 B	96.7 B	61.8	36.22	7	76.37 Q	28.48	9.73	0.371	113.78
160	OH 530	94.4 C	101.6 A	94.4 C	58.4	36.83	7	76.28 Q	28.67	10.55 Q	0.362	113.38
152	CARDINAL	106.4 A	93.2 C	93.2 C	59.9	31.48 *	7	77.80	29.32	8.82	0.355	126.03
154	PIONEER 2510	100.9 A	91.7 C	91.7 C	61.9	34.33	7	77.04	29.44	9.63	0.361	120.60
167	CAYUGA	90.5 C	96.3 B	90.5 C	62.4	35.47	8	76.55 *	26.93 *	10.45 *	0.369	108.84
165	HOFFMAN 95	104.9 A	90.3 C	90.3 C	62.1	30.77 *	7	77.65	28.94	9.12	0.355	123.72
151	HARUS	88.5 D	100.0 A	88.5 D	59.0	32.74 *	7	76.27 Q	27.36	11.16 Q	0.416	99.01 *
158	BATAVIA	88.1 D	90.3 C	88.1 D	59.8	35.47	7	75.82 Q	27.81	11.16 Q	0.413	99.12 *
161	IL 89-6483	87.9 D	84.3 E	84.3 E	58.6	34.54	9	75.93 Q	26.87 *	10.45 *	0.395	102.11
168	PION. 2540	83.3 E	91.2 C	83.3 E	60.1	33.95	8	75.47 Q	26.67 *	11.16 Q	0.392	98.58 *
169	TW 92405	84.1 E	80.2 E	80.2 E	58.0	32.68 *	8	76.30 Q	26.01 Q	11.27 Q	0.419	94.90 *

9700007

9700007

DATA RANKED ACCORDING TO COMBINED QUALITY SCORE

SOFT WHEAT QUALITY EVALUATION  
FOR WHEAT AND MILLING QUALITY

1997 CROP

SOFT RED NURSERY  
ITHACA, NEW YORK

STANDARD = #155, MENDON

SAMPLE NO.	ENTRY	BAKING QUALITY SCORE	FLOUR PROTEIN %	FLOUR ASH %	A.W.R.C. %	COOKIE DIAMETER CM.	TOP GRAIN	BREAK FLOUR YIELD
150	GENEVA	105.0 A	7.56	0.417	53.6	18.63	5	37.74
*	STANDARD	100.0 A	7.46	0.405	53.9	18.26	4	37.09
155	MENDON	100.0 A	7.46	0.405	53.9	18.26	4	37.09
162	PA 8769-158	99.7 B	7.62	0.371	54.9	18.43	5	36.22
160	OH 530	101.6 A	6.96	0.362	54.5	18.52	5	36.83
152	CARDINAL	93.2 C	7.87	0.355	52.4	18.22	5	31.48 *
154	PIONEER 2510	91.7 C	6.91	0.361	56.9 *	18.33	4	34.33
167	CAYUGA	96.3 B	8.45 Q	0.369	55.9 *	18.45	6	35.47
165	HOFFMAN 95	90.3 C	7.87 *	0.355	55.4	18.56	6	30.77 *
151	HARUS	100.0 A	7.97 *	0.416	52.2	18.35	4	32.74 *
158	BATAVIA	90.3 C	7.86	0.413	52.7	18.01	4	35.47
161	IL 89-6483	84.3 E	7.32	0.395	54.5	18.00	4	34.54
168	PION. 2540	91.2 C	7.90 *	0.392	54.6	18.20	4	33.95
169	TW 92405	80.2 E	8.30 Q	0.419	53.3	17.90	5	32.68 *

## 1998 CROP

MARK SORRELLS  
ITHACA, NEW YORK  
MUSEUM GROUP

STANDARD = #2515, GENEVA

SAMPLE NO.	ENTRY	MILLING QUALITY SCORE	BAKING QUALITY SCORE	COMBINED QUALITY SCORE	ADJ. YIELD	PROTEIN %	AWRC %	SOFT-NESS EQUIV.
*	STANDARD	100.0 A	100.0 A	100.0 A	72.00	8.33	53.8	57.23
2501	6001 Purcell	95.4 B	99.8 B	95.4 B	70.62 *	8.80	54.1	57.48
2502	6002 Arrow	101.4 A	94.9 C	94.9 C	72.43	8.33	53.4	52.25 *
2503	6003 Caledonia	100.1 A	100.9 A	100.1 A	72.04	8.04	53.2	57.10
2504	6004 Genesee	97.5 B	94.1 C	94.1 C	71.24	8.67	53.5	51.78 *
2505	6005 Nured	98.4 B	90.9 C	90.9 C	71.53	9.42 *	54.3	50.20 Q
2506	6006 Avon	99.8 B	94.8 C	94.8 C	71.95	9.04	52.8	51.33 *
2507	6007 NY 6432-10	101.5 A	90.6 C	90.6 C	72.46	9.45 *	53.9	49.30 Q
2508	6008 Yorkwin	96.6 B	90.6 C	90.6 C	70.99 *	9.94 *	54.5	50.19 Q
2509	6009 Valprize	95.6 B	87.2 D	87.2 D	70.69 *	9.45 *	56.7 *	50.44 Q
2510	6010 Susquehanna	100.7 A	97.9 B	97.9 B	72.20	9.58 *	54.3	56.17
2511	6011 Batavia	94.9 B	99.0 B	94.9 B	70.48 *	8.26	54.7	57.65
2512	6012 NY 6432-18	101.1 A	93.3 C	93.3 C	72.33	8.80	53.7	51.35 *
2513	6013 Honor	97.5 B	95.6 B	95.6 B	71.25	9.14	53.2	52.59 *
2514	6014 Houser	100.3 A	102.1 A	100.3 A	72.10	8.49	53.9	59.13
2515	6015 Geneva	100.0 A	100.0 A	100.0 A	72.00	8.33	53.8	57.23
2516	6016 Yorkstar	99.3 B	99.0 B	99.0 B	71.78	8.45	52.3	54.19
2517	6017 Forward	97.8 B	91.2 C	91.2 C	71.34	9.97 *	54.5	50.74 Q
2518	6018 Ticonderoga	96.2 B	94.3 C	94.3 C	70.86 *	8.86	54.1	52.81 *
2519	6019 Cayuga	95.5 B	99.4 B	95.5 B	70.65 *	9.64 *	54.2	57.32
2520	6020 Cornell 595	97.4 B	90.5 C	90.5 C	71.24	9.26 *	54.0	49.44 Q

EARLY GENERATION SCREENING EVALUATION  
FOR SOFT WHEAT MILLING AND BAKING QUALITIES

1998 CROP

MARK SORRELLS  
ITHACA, NEW YORK  
MISC. 97 & 98 GROUP

STANDARD = AVG. OF 2 GENEVA ENTRIES

SAMPLE NO.	ENTRY	MILLING QUALITY SCORE	BAKING QUALITY SCORE	COMBINED QUALITY SCORE	ADJ. YIELD	PROTEIN %	AWRC %	SOFT-NESS EQUIV.
*	STANDARD	100.0 A	100.0 A	100.0 A	72.00	8.61	53.7	57.20
2521	6069 BATAVIA	94.3 C	98.4 B	94.3 C	70.31 Q	8.64	54.4	56.95
2522	6070 GENEVA	100.1 A	98.0 B	98.0 B	72.03	8.82	53.9	55.86
2523	6071 HARUS	94.1 C	97.6 B	94.1 C	70.25 Q	9.14	52.5	53.45 *
2524	6072 CAYUGA	94.1 C	95.9 B	94.1 C	70.24 Q	9.75 *	55.1	55.82
2525	6073 6432-18/10-122SR	103.7 A	95.1 B	95.1 B	73.09	9.75 *	53.3	52.47 *
2526	6074 6432-18/10-29SR	101.3 A	88.7 D	88.7 D	72.40	9.39	54.8	49.19 Q
2527	6075 6432-18/10-51SR	99.5 B	91.1 C	91.1 C	71.85	9.81 *	53.2	48.92 Q
2528	6076 6432-18/10-55SR	98.1 B	90.3 C	90.3 C	71.42	9.10	55.0	50.87 Q
2529	6077 6432-18/10-67SR	100.9 A	90.7 C	90.7 C	72.25	9.70 *	53.9	49.64 Q
2530	6078 6432-18/10-73SR	98.7 B	87.8 D	87.8 D	71.60	9.46 *	54.5	47.97 Q
2531	6080 CC/6432-18-11SR	100.8 A	74.8 F	74.8 F	72.23	10.94 Q	56.2 *	39.36 Q
2532	6081 CC/6432-18-33SR	94.7 C	90.5 C	90.5 C	70.43 Q	11.24 Q	54.2	49.92 Q
2533	6082 CC/6432-18-78SR	94.7 C	85.3 D	85.3 D	70.41 Q	10.99 Q	55.3	47.06 Q
2534	6083 CI02057	103.4 A	81.4 E	81.4 E	73.02	10.44 Q	55.2	43.55 Q
2535	6084 Daws	94.6 C	94.8 C	94.6 C	70.39 Q	9.90 *	56.9 *	57.50
2536	6085 Hyak	93.7 C	91.9 C	91.9 C	70.12 Q	10.51 Q	55.1	52.39 *
2537	6086 Malcolm	98.3 B	98.1 B	98.1 B	71.48	10.32 Q	52.8	54.34
2538	6087 Meridian	98.5 B	76.9 F	76.9 F	71.53	10.53 Q	55.5	40.13 Q
2539	6088 PI 376505BA	99.2 B	99.0 B	99.0 B	71.74	9.71 *	53.4	55.96
2540	6089 PI 376505BA	92.1 C	74.1 F	74.1 F	69.65 Q	11.57 Q	57.8 *	41.09 Q
2541	6090 PI 376505BA	93.6 C	77.4 F	77.4 F	70.10 Q	11.28 Q	56.0	41.33 Q
2542	6091 PI 435014	89.5 D	62.3 F	62.3 F	68.87 Q	11.76 Q	59.9 Q	34.00 Q
2543	6092 PI 435014	101.2 A	67.5 F	67.5 F	72.36	10.42 Q	55.4	31.98 Q
2544	6093 PI 435014	94.4 C	59.1 F	59.1 F	70.33 Q	10.28 *	58.2 *	28.85 Q
2545	6094 PI 435014	99.5 B	74.0 F	74.0 F	71.85	10.25 *	53.7	35.07 Q

**Exhibit E. Statement of the Basis of the Applicant's Ownership****Ownership****Cayuga Soft White Winter Wheat**

The owner of Cayuga soft white winter wheat is the Cornell Agricultural Experiment Station, Ithaca, NY. Cayuga was bred and tested by Dr. M. E. Sorrells while employed at Cornell University and by agreement, varieties developed are the property of the Cornell Agricultural Experiment Station, Ithaca, NY.